RT-2®

NovAtel's RT-2 delivers high accuracy positions. Based on the MiLLennium GPSCard, RT-2 applies the dual frequency advantage to deliver the most sophisticated RTK system available. Precision positioning based on fixed integer carrier phase ambiguity estimates provide nominal short baseline accuracy of two centimeters. Performance is extended to longer baseline applications through the use of dual frequency derived ionospheric corrections. Ease of use is guaranteed by fast and robust "on-the-fly" initialization algorithms.

To address your integration requirements, RT-2's multiple hardware configurations provide you with the flexibility you need. Available modules include a single card OEM platform for embedded systems, and PowerPak II or ProPak II enclosures for standalone applications. RT-2 is also available as an upgrade to our lower MiLLennium models.

Features

- Better than 2 cm real time kinematic (RTK) accuracy with "on-the-fly" initialization
- L1 C/A code and carrier tracking
- L2 P code and full wavelength carrier tracking
- 24 channel "all in view" parallel tracking
- Fast reacquisition
- Patented Narrow Correlator® tracking technology
- 5 or 10 MHz external oscillator input
- 10 Hz position output rate
- 10 Hz raw data output rate
- 1 PPS output
- Event marker
- RTCM SC104 v 2.1/2.2
- RTCA SC159
- RINEX v 2.0
- NMEA 0183 v 2.0
- RT-2 transmit and receive
- Transmit CMR v 3.0, receive CMR v 1.0, 2.0, & 3.0
- GPSolution® – Windows® compatible graphical user interface

Specifications[1]

• position accuracy[2]	
standalone	
SA off	11 m CEP[3]
SA on	48 m CEP[4]
differential[5]	
RTCM	0.60 m CEP
RT-2[6]	1 cm + 2 ppm
• post-processed	±5mm +1ppm
• time to first fix	
cold start	67 s (typical)
• re-acquisition	
warm start	1 s L1, 10 s L2 (typical)
• data rates	
raw measurements	10 Hz
position	10 Hz
• time accuracy[7]	
SA off	102 ns RMS[3]
SA on	173 ns RMS
• velocity accuracy	
standalone	0.20 m/s RMS
differential	0.03 m/s RMS
• measurement precision	
C/A code	10 cm RMS
L2 P code	40 cm RMS
L1 carrier phase	
single channel	3 mm RMS
differential channel	0.75 mm RMS
L2 carrier phase	
single channel	5 mm RMS
differential channel	4 mm RMS
• dynamics	
acceleration	6 g
velocity[8]	515 m/s

1. *Performance specifications are subject to GPS system characteristics & U.S. DOD operational degradation.*
2. *Accuracy is dependent upon one or more of the following: ionospheric and tropospheric, satellite geometry, baseline length, occupation time, number of svs tracked and multipath effects.*
3. *Official SA off figures are not available, specification based on PPS (Ref. 1999 Federal Radionavigation Plan). Performance of NovAtel receivers with SA off exceeds official PPS accuracy. Typical position accuracy is 1.5m CEP for L1/L2 models or 1.8m CEP for L1 models. Typical timing accuracy is 20 ns RMS.*
4. *SPS (SA on): 100m 95% (Ref. 1999 Federal Radionavigation Plan).*
5. *Requires use of antenna with choke ring or GPS-600 antenna.*
6. *See Typical Performance chart at right.*
7. *Time does not include biases due to antenna or RF delay.*
8. *Export licensing restricts operation to 60,000 feet maximum and 1,000 nautical miles/hour maximum.*

MiLLennium RT-2

• physical (Eurocard)	
size	17.9 cm x 10.0 cm x 1.5 cm
weight	175 g
• temperature	
operating	-40°C to +85°C
storage	-45°C to +95°C
• humidity	≤ 95% non-condensing
• interface	
dual RS232	300 to 115,200 bps
strobes I/O	5 signals, TTL level
external clock	5 or 10 MHz
• connectors	
edge	64 pin 0.1" DIN 41612 type B
antenna	SMB male
external oscillator	SMB male
• input voltage	+5 VDC
• power consumption	6.75 W (typical)

PowerPak-II RT-2

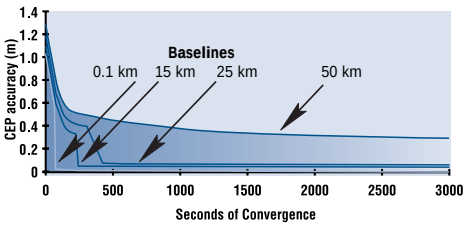
• physical	
size	21.0 cm x 11.1 cm x 4.7 cm
weight	980 g
• temperature	
operating	-40°C to +60°C
storage	-40°C to +85°C
• humidity	≤ 95% non-condensing
• interface	
dual RS232	300 to 115,200 bps
strobes I/O	5 signals/ TTL level
external clock	5 or 10 MHz
• connectors	
communications	DE9P
strobes I/O	DE9S
antenna	TNC female
power	2.1 mm threaded plug
external oscillator	SMB male
• input voltage	10-36 VDC
• power consumption	9.75 W (typical)
• accessories included	
RS232 "Y" type null modem cable	
automotive power cable	
• optional accessories	
110/220 Volt AC adaptor	

ProPak-II RT-2

• physical	
size	25.1 cm x 13.0 cm x 6.2 cm
weight	1.3 Kg
• temperature	
operating	-40°C to +55°C
storage	-40°C to +85°C
• humidity	≤ 95% non-condensing
• interface	
dual RS232	300 to 115,200 bps
strobes I/O	5 signals, TTL level
• connectors	
communications	10 pin lemo
strobes I/O	8 pin lemo
power	4 pin lemo
antenna	TNC female
• input voltage	10-36 VDC
• power consumption	10.75 W (typical)
• accessories included	
RS232 null modem and straight cable	
strobe I/O cable	
automotive power cable	
• optional accessories	
110/220 Volt AC adaptor	

Typical Performance

RT-2 Convergence - Static Mode



Version 00/06 • Printed in Canada

For detailed product technical specifications, please call:

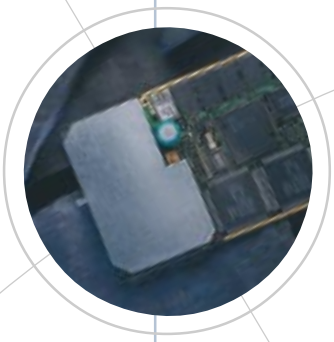
1-800-NovAtel

in U.S. or Canada or +1-403-295-4900
e-mail: sales@novatel.ca
internet: www.novatel.ca

NovAtel Inc.
1120 - 68th Avenue NE
Calgary, Alberta, Canada T2E 8S5

Look into NovAtel's RT-2®

It's the pinnacle of high accuracy "real time kinematic" (RTK) performance. Based on the 24 channel L1/L2 MiLLennium® GPSCard™, the RT-2 computes fixed integer carrier phase ambiguity estimates to deliver better than 2 cm accuracy in real-time. Fast and robust "on-the-fly" initialization algorithms are employed to guarantee performance and ensure ease of use.



ADVANTAGES

- Better than 2 cm RTK accuracy
- 24 channel "all in view" parallel tracking
- L1 C/A code and L2 P code measurements
- L1 and L2 full wave carrier measurements
- Narrow Correlator® tracking technology
- P code tracking through Antispoofing (AS)
- High data output rates
- Low data latency
- Accurate and robust L1/L2 RTK with "on-the-fly" initialization
- Modest differential data link requirements
- RTCM message types 18, 19, 20 and 21
- Compatible with CMR message format
- Ionospheric corrected positions
- High dynamics
- OEM or standalone configurations
- Flexible integration

RT-2